



License Plate Recognition Technology Briefing

ELSAG North America Law Enforcement Systems



☐ A U.S. Based Division of Finmeccanica

- ☐ \$38MM investment in Law Enforcement Technology R&D and American expansion
- ☐ Headquartered in Brewster, NY U.S.A.
- ☐ All manufacturing in Greensboro, NC U.S.A.

☐ Years of experience and rapid market adoption

- ☐ First introduced in Italy 12 yrs. ago/expanded throughout Europe
- ☐ Introduced to US market nearly 4 years ago with Ohio State Highway Patrol
- ☐ **Over 520 U.S. Customers today**

☐ Market Leadership

- ☐ Focus on Service Excellence and 24/7 Customer Support
- ☐ Innovation leadership in the LPR market
- ☐ Depth and Breadth of Mission
- ☐ Attention to Details

Over 8000 Stolen Vehicles and 5500 Arrests and counting in the U.S. with Elsag LPR Equipment

ELSAG US Deployments



NYPD	Washington, DC	Detroit, MI
100% NY State	Baltimore, MD	Cleveland, OH
Secret Service	Los Angeles, CA	Columbus, OH
DEA	Orange County, CA	Tampa, FL
HIDTA	Phoenix, AZ	Atlanta, GA
Tennessee Highway Patrol	Tucson, AZ	Little Rock, AR
New York State Police	Miami, FL	Tulare County, CA
Arizona Dept. of Public Safety	Ft. Lauderdale, FL	Richmond, VA
Maryland State Police	Jacksonville, FL	Roanoke, VA
Virginia State Police	Baton Rouge, LA	Arlington, VA
Kentucky State Police	Louisville, KY	Alexandria, VA
Pennsylvania State Police	Gulfport, MS	Hampton, VA
Georgia State Patrol	Herndon, VA	Norfolk, VA
Colorado State Police	Aurora, CO	Newport News, VA
Ohio State Highway Patrol	Fairfax, VA	Chesterfield, VA
Nebraska State Police	Sioux Falls, SD	Myrtle Beach, SC
Ft. Lee Army Base	New Haven, CT	Georgetown, SC
Denver, CO	Pinellas County, FL	Dekalb County, GA
Philadelphia, PA	San Jose, CA	Santa Clara County, CA
Pittsburgh, PA	St. Paul, MN	And over 300 more...
Minneapolis, MN	Stamford, CT	

"Working with the MPH-900... ***is like fishing with dynamite***... It's tremendous."

--Arizona DPS Director Roger Vanderpool

Mission Critical



70% of all U.S. criminal activity involves vehicles

- World Trade Center bombing
- Oklahoma City car bombing
- Illegal border crossing
- Drug, human and weapons trafficking
- Carjacking and other felony offenses
- DC Sniper
- Suspended and uninsured drivers

- ✓ **Improve Officer Safety**
- ✓ **Eliminate Profiling Charges**
- ✓ **See What You Can't See**

The Challenge of U.S. Plates

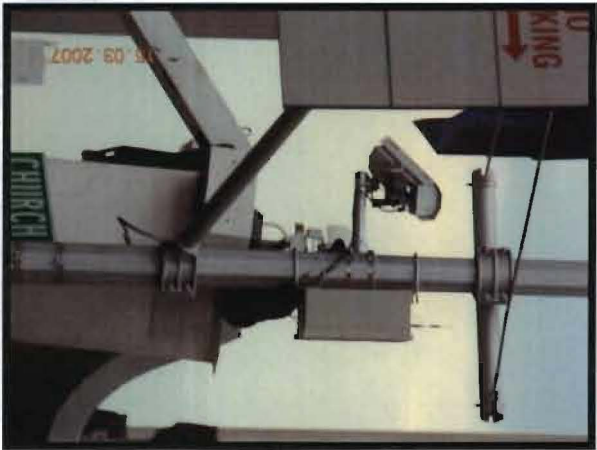


- ❑ All License Plates are NOT Created Equal
- ❑ The Magic is in the Details that Can Make **All** the Difference in Results



- ❑ High performance levels of the OCR algorithms achieved through customization -- 95%+ accuracy
- ❑ Only LPR Provider that can read plates in all 50 states including Canada and Mexico

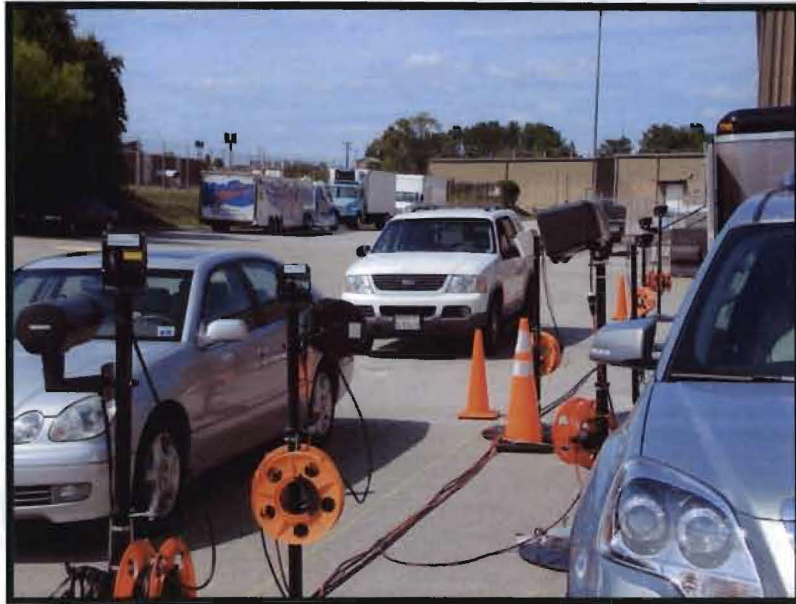
Mobile & Fixed Applications



Custom Covert Deployments



ALPR Deployable Command Trailer

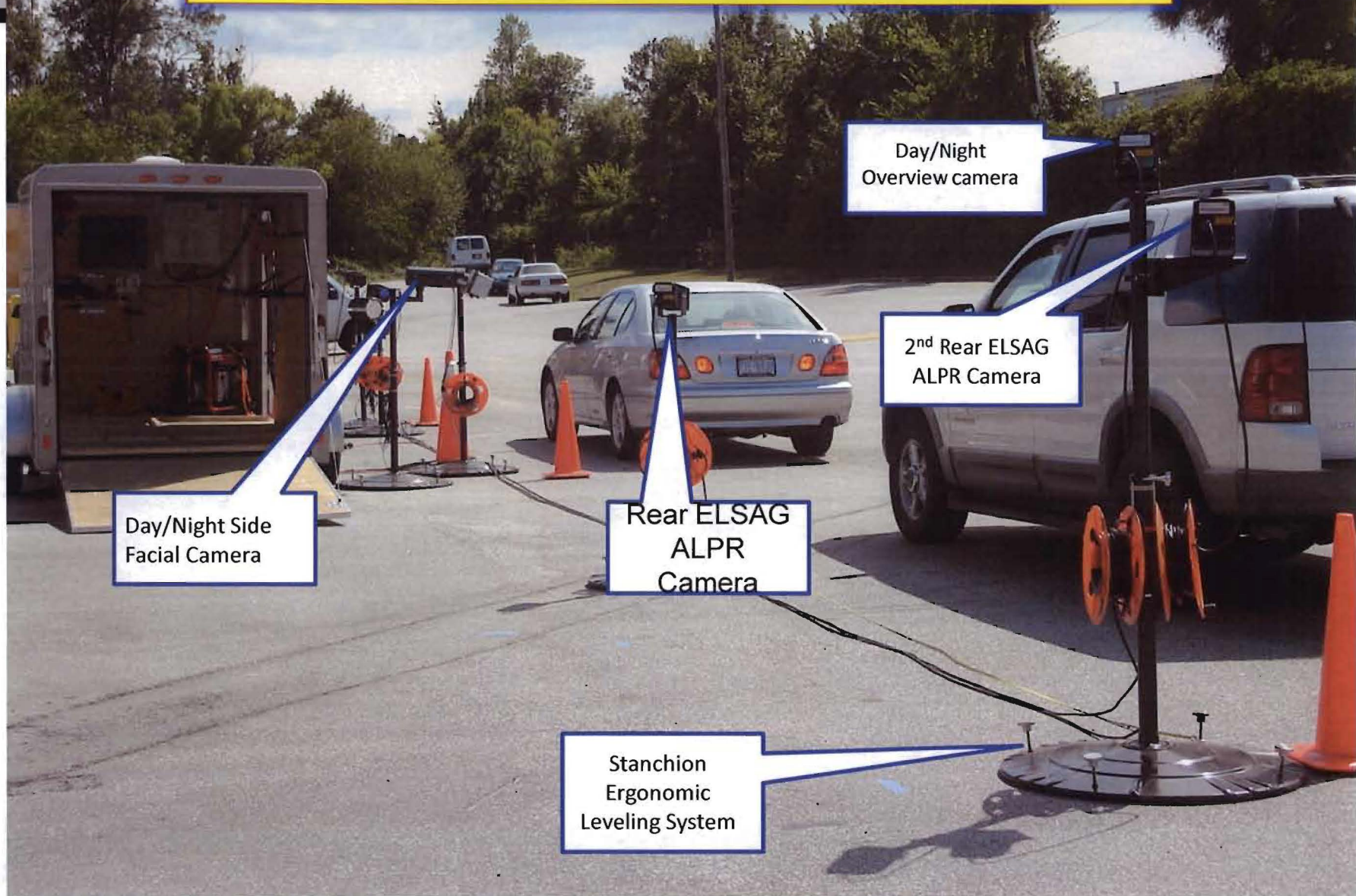


- Can take facial shots of driver/passenger
- Deploys anywhere/anytime in under an hour
- Can transmit data to remote location
- Establish checkpoint or operate at speed



ALPR Deployable Checkpoint Trailer

Full Deployment – Rear View



Driver Day/Night Image Capture



- Additional Camera inputs are available with Illumination that can cut through windshields in complete darkness..at speed.



Back Seat Passengers

Camera Range and Performance



- *Operates at 140 MPH passing and closing speeds*
- *Works day or night, in any kind of weather*
- *Cameras capable of reading 900 plates per minute*
- *Reads plates from **all** 50 states including flat and red character plates*
- *Performs ambiguous searches to improve accuracy*
- *Alerts within milliseconds if a vehicle is suspect*
- *Multi-level alarm levels for prioritization*
- *Can be configured with a variety of different camera ranges*
- *Can be configured to remotely alarm to an email recipient*
- *Can operate with data from different sources and be updated on the fly*

Continuous Improvement



Comparison between 3rd and 4th generation cameras



New cameras shown with optional light bar mounting



Main Car System Screen



LPR
Mobile Plate Hunter 900

Alerts
Hazard

Vehicle ID: 1
Pending Alerts 0

11

SE2[0D][0D]7
?
08:02:00

Management
Live

Hot list last update

2006-11-28 06:55

Operations

Reader

▶

■

Optional camera

▶

■

Alarm
Last events

Left camera	11	Optional camera	3	Right camera	11
PDX5598	? 08:01:03	[D00]AH8121	? 08:01:08	SE2[0D][0D]7	? 08:02:00
CV5656	? 08:00:55	BW41	? 07:59:55	AA07LZ	? 08:01:41
DNE6785	? 08:00:47	[D00]PT1791	? 07:57:56	DAH8121	? 08:01:12
DER9441	? 08:00:20			EH51WU	? 07:58:53
CW78WV	? 07:59:55			CJ34NH	? 07:58:40

About

LPR ■
GPS ■

□

✕

Shift Reporting Results



Click Cartography Tab to display ALL reads in report

LPR Mobile Plate Hunter 9000

Vehicle ID: 1 Pending Alerts: 0

Alerts [X]

Hot list Hot list results Reports Report results **Cartography**

Found matches : 110

Date	Plate	State	Reader	Lat	Long
2008-08-12 14:25:18	EJK9346	?	Left	39.648470	-84.157225
2008-08-12 14:25:17	ELL6072	?	Left	39.648470	-84.157225
2008-08-12 14:25:16	EF92XJ	?	Left	39.648685	-84.157210
		?	Left	39.648685	-84.157210
		?	Left	39.648685	-84.157210
		?	Left	39.648957	-84.157197
		?	Left	39.648957	-84.157197
		?	Left	39.648957	-84.157197
-08-12 14:25:05	BF78CM	?	Right	39.649210	-84.157188
-08-12 14:24:36	AKX4893	?	Left	39.651622	-84.157100

Click plate image to display corresponding map location

Map showing location of EJK9346 near Covertside, Loop, and I-675.

Class: Source: Note:

Export Close

About 2008-08-12 14:46:38 LPR GPS Hazard

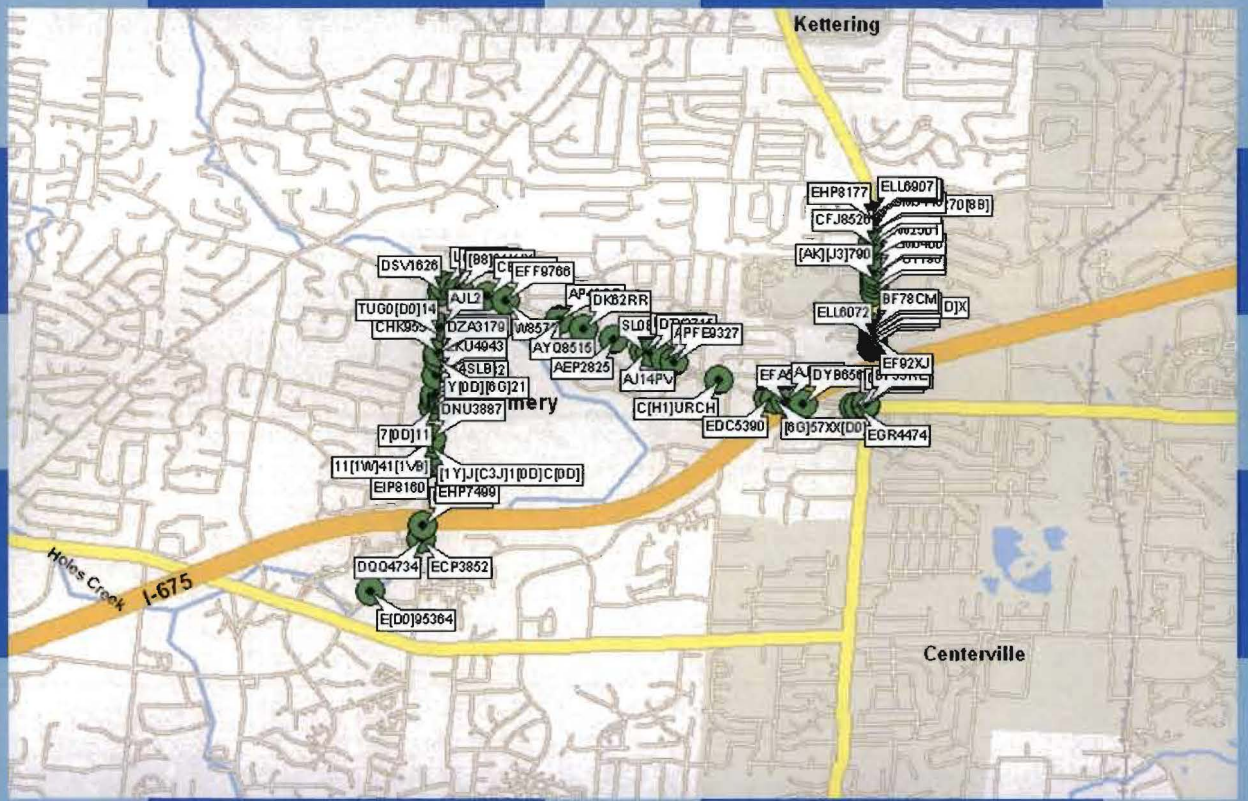
Cartography



LPR Mobile Plate Hunter 900

Vehicle ID: 1 Pending Alerts 0 Alerts

Hot list Hot list results Reports Report results Cartography



The map displays a geographical area with roads and landmarks. Numerous vehicle locations are marked with green dots, each accompanied by a license plate number. The map includes labels for 'Kettering', 'Centerville', 'Holes Creek', and 'I-675'. A scale bar on the right indicates a zoom level of 1:500,000, with a slider and buttons for zooming in and out. Below the map, there are buttons for 'Reset' and 'Close'. At the bottom of the interface, there is a status bar with 'About', 'LPR', 'GPS', and 'Hazard' indicators, along with a timestamp '2008-08-12 14:47:32'.

Reads: 110 Period: 2008-08-12 14:20:04 - 2008-08-12 14:31:24 Point(s) out of map: 21

2008-08-12 14:47:32

LPR GPS Hazard

The MPH-900 works behind the scenes



Until the alarm sounds!

The screenshot shows the 'Mobile Plate Hunter 900' interface. At the top, it says 'LPR Mobile Plate Hunter 900' with 'Vehicle ID: 1' and 'Pending Alerts: 0'. A central video feed shows a license plate 'DR50JD'. To the left of the feed are zoom and brightness controls. To the right are 'Management' and 'Diagnostics' tabs, a 'Hot list last update' timestamp '2008-06-25 07:19', and 'Operations' and 'Readers' buttons. Below the video feed, a status bar shows 'Right DR50JD ? 07:59:33'. At the bottom, there's an 'Alarm' section with 'Last events' showing 'DR50JD OH Local 01 Stolen Vehicle'. To the right of this are 'Accept' and 'Reject' buttons. Further right are 'Info', 'Setup', 'Menu', and 'Hazard' buttons. At the very bottom, there's an 'About' button, a date '2008-06-25 07:59:41', and status indicators for 'LPR' (green) and 'GPS' (red).

Enhancement Buttons Allow User to Zoom On Plate or Brighten Image

Up to 100 characters of alarm description

Alarms can be transmitted to dispatch

ALL ALARMS REQUIRE REAL TIME CONFIRMATION WITH NCIC

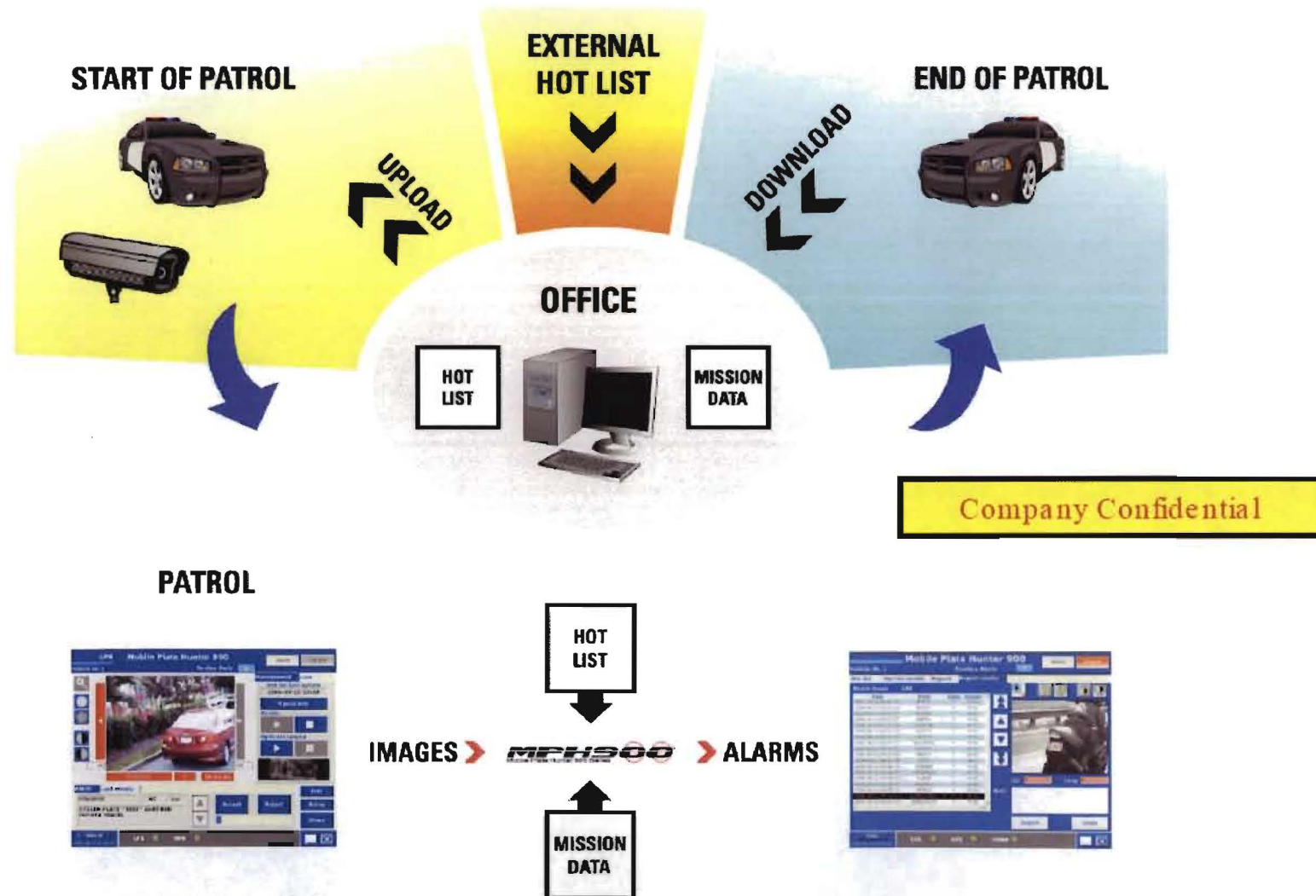
Confirm State in Alarm matches state of License plate that alarmed.

Operations Center Function

Central repository for data collection of all cameras in network



•Daily Lifecycle Example:



ELSAG Operations Center™

Intelligence Analysis Module Functions



Thursday, November 06, 2008 8:37:39

[Logout](#)

[Help](#)

Alarms count:



System admin

[Change password](#)

[Diagnostic](#)

[Query/Statistics](#)

[- Query Reads](#)
[- Alarm validation](#)
[- Statistics](#)

[Hot List Management](#)

[User Config](#)

[Parameters Management](#)

[Roles Management](#)

Query Reads

START	Day	05	Month	11	Year	2008	Hour	10	Minutes	30
END	Day	06	Month	11	Year	2008	Hour	10	Minutes	45

License Plate	<input type="text"/>	State	<input type="text"/>
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Reader	<div>Bud Crown Vic NY Lab AD3 Lab Camera #4 POLICIA MEXICO 2 cameras Tony</div>	Transit status	<div>Deferred Alarm Expired Alarm Rejected Alarm Normal Transit Pending Alarm Accepted Alarm</div>	Alarm Class	<input type="text"/>
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Cartographic Tool

☐ Use Map

Geographic Coordinates

Latitude Longitude Radius (Miles)

☐ Show thumbnails image

- Easy to use screens for simple data analysis
- Intuitive interface requires little training

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Intelligence Analysis Module Functions



Centralization of Data Storage

Images archived at the Central Server

Powerful Analytics

Easy search tools for a variety of options

Search by time, location, area

Conduct partial plate queries

Virtually unlimited number of records

New York City today has over 50MM records *(have never lost one)*

Distributed Scalable Architecture

Database Server, Web Server, Application Servers on separate machines. Built to support **NATIONWIDE COVERAGE**

Flexible Communication Support:

Built to operate wirelessly over air card or local wi-fi, thumb drive

ELSAG Operations Center

Intelligence Analysis Module Functions



MPH500
Mobile Plate Hunter 500 Series

Thursday, November 06, 2008 8:40:25

Logout

Help

Query Results.

START 05/11/2007 10:30
END 06/11/2008 10:45
Reader Lab Camera #4

Alarms count:



System admin

Change password

Dagnostic

Query/Statistics

Query Reads

Alarm validation

Statistics

Hot List Management

User Config

Parameters Management

Roles Management

Number of elements: 652

[1 - 13]

Image	Transit Date and Time	License Plate	Transit status	State	Reader	Alarm Class
	05/11/2007 10:30:30	EPY6788	Normal Transit	?	Lab Camera #4	
	05/11/2007 10:30:30	453835	Normal Transit	?	Lab Camera #4	
	05/11/2007 10:30:30	8[E8]12774	Normal Transit	?	Lab Camera #4	
	05/11/2007 10:30:30	HAYSCR	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:03:19	7P246[00]	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:06:49	W2[00D]5C	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:07:33	6W14U4	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:09:30	5H[PM]H735	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:10:37	8D71774	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:10:40	8D21774	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:10:46	8072ZW	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:11:15	G008121	Normal Transit	?	Lab Camera #4	
	04/11/2008 10:11:28	8072ZW	Normal Transit	?	Lab Camera #4	

[1 - 13]

javascript:OpenSession('Controller?action=queryalarm&action_function=vedtransito&index=0')

Done

Internet
internet

100%
100%

Initial requests may be further inspected for detailed information

Positioning the mouse over the thumbnail picture instantly creates a larger picture.

Clicking on the picture results in the detailed screen being presented to the user.

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Intelligence Analysis Module Functions



MPH900
Mobile Plate Hunter 900 Series
Thursday, November 06, 2008 9:56:46

Logout

Help

A “point-to-it” map interface allows you to query all reads in a particular area of interest.

Simply place the cursor over the area that you want to search and click.

Alarms count:



System admin

Change password

Diagnostic

- Manual alarm insertion
- Alarm Management
- Email Address
- Diagnostic Applet

Query/Statistics

- Query Reads
- Alarm validation
- Statistics

Hot List Management

User Config

Parameters Management

Roles Management

Query Reads

START Day 05 Month 11 Year 2008 Hour 11 Minutes 45
END Day 06 Month 11 Year 2008 Hour 12 Minutes 00

License Plate State

Bud Crown Vic NY Deferred Alarm Expired Alarm

Reader

http://75.144.201.237:8080/Operational_Center/gis/MapView.jsp Windows Internet Explorer

Help
Lat: 33° 44' 52" N Lon: 117° 33' 23" W

Riverside

Zoom In

OK

ELSAG Operations Center™

Intelligence Analysis Module Functions



- The data may also be exported for use in your existing mapping software.



LPR In the War on Terror



Lower Manhattan Security Initiative

- Ring of Steel protecting Financial District
- Dignitary security
- Fixed locations and mobile units
- Over 200 LPR cameras networked together throughout the city
- Incredibly valuable database
(over 50MM records)



How LPR Is Being Used Today



Interdiction

- Stolen vehicles and felony apprehensions
- Amber Alerts
- Drug and Weapon Seizures
- **Suspended and Uninsured Drivers**
- Sex Offender violations
- Wants/Warrants
- Traffic Safety
- School Bus Safety

Intelligence

- Tracking Organized Crime
- Crime Scene Investigations
- Homeland Security Investigations
- Persons of Interest
- Terrorist Watch list
- Remote Alarming

Income

- Parking Enforcement (booting, timed enforcement, registration violations)
- Tax Collection (City of Hampton Virginia, Chesterfield County, VA, New Haven, CT)

THESE CAMERAS ALL REPRESENT VALUABLE INTELLIGENCE WHEN CENTRALIZED

PA Auto Theft Results



The Pennsylvania Auto Theft Prevention Authority initially supported the deployment of 13 systems with auto theft units across the state.

Results:

2006 (8 months only):

248 stolen vehicles recovered/125 stolen plates recovered

49 arrests made

2007:

263 stolen vehicles recovered/127 stolen plates recovered

55 arrests made

2008:

348 stolen vehicles recovered/152 stolen plates recovered

77 arrests made

Totals for 2 year + timeframe: 859 vehicles recovered and 181 arrests Made

\$8.2MM in vehicles recovered

Recent Results



Baltimore County Auto Theft Decline

“The Baltimore County Police Department has apprehended car thieves, armed robbery suspects, delinquent parents, and drug dealers using the ALPR. Preliminary figures show for the period of January 1, 2008 to December 14, 2008 there was a 12.7 percent decline in auto theft compared to the same period in 2007.” *Baltimore County Police Press Release 12/18/08*

Port Arthur PD (Texas) Warrant Sweep – December 2008

16.5 hrs

124 traffic stops

69 arrests

\$71,500.00 recovered in fines.

“It was DNA 10 years ago; LPR is the **NEXT** Revolution in Policing...”

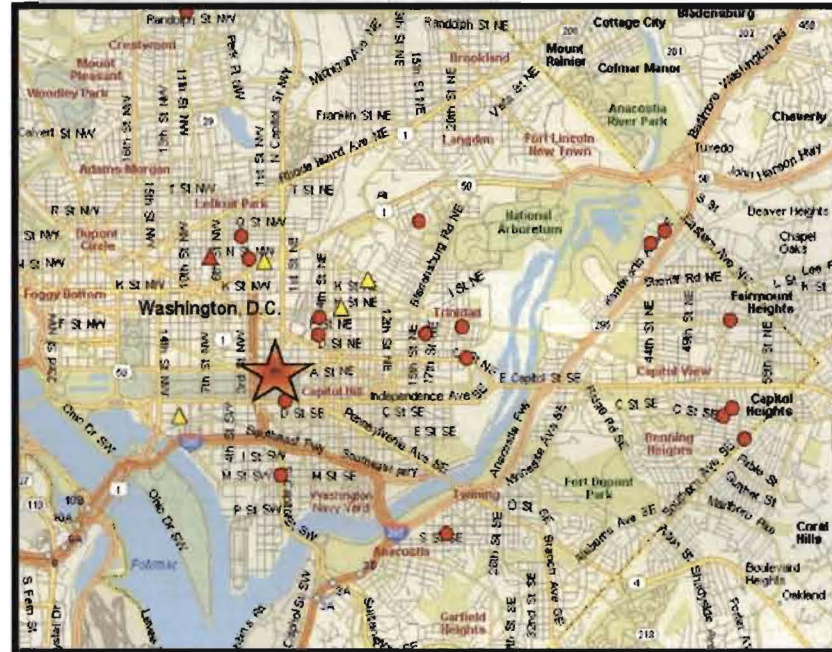
Dr. Stanley Erickson, National Institute of Justice

Interdiction Case Study: Washington, DC



Metropolitan DC PD Auto Theft Sweep Operation

Total Reads	59,650
Average Total Patrol Time For 5 Vehicles	21 hours
Stolen Vehicles Recovered	38
Carjacking Vehicles Identified	5
Tractor Trailers	1
Stolen Plates Recovered	14
# Of Bench Warrant Alarms	2
TOTAL ALARMS WITH INTERDICTION	54
Average Time Between Alarms	23m : 20s
# Of Guns Recovered	3
# Of Current Arrests	18



2 DRUG SEIZURES

Seizure #1 → 62 grams of Crack Cocaine

Seizure #2 → 30 Separate Rocks of Crack Cocaine + 2 Zips of Crack; 1 lb of Marijuana + Measuring and Packaging Devices

Stolens of Note

Stolen Tractor Trailer reported stolen in Massachusetts found in DC.

Capital Grounds-

- #1 Stolen Late Model Truck 8:34 AM 101 Constitution
- #2 Stolen Taxi Cab 6:15 PM Rayburn Office Building

Interdiction Case Study: Arizona



"An Army of ONE"

Officer David Callister

# of LPR Units	1
Months deployed	16
Total Reads	1,100,000
# of Arrests	100
Vehicles Recovered	157
# of Wanted Persons	5
Cash Recoveries	\$80,000
Major Drug recovery	5lbs. Meth.

Most Productive Hour - 7 Stolen's



"Before, when we were on patrol, we didn't have the ability to read every plate that went past us, but this system does exactly that and it also can refer back to vehicles that have passed me hours ago. **If I get an Amber Alert,** I can research to see if that vehicle had passed me within a certain period of time, and if it did, the system will tell me what direction the vehicle was traveling. **The technology is like something out of 'Star Wars'.**"

--AZDPS Officer Dave Callister

Funding Sources



- Urban Area Security Initiative Grants
- Department of Criminal Justice Services (NY benchmark)
- Law Enforcement Terrorism Prevention Program
- Auto Theft Prevention Authorities
- Insurance Company direct grants
- Governor's Office's for Highway Safety
- NHTSA
- School Safety Grants (geo-fencing / school bus safety)

Contact Info



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